Amendments to the Specification:

Please add the following new paragraph after the title of the invention and above Field of the Invention:

[000] This application claims the benefit of U.S. Provisional Application No. 60/413,162, filed September 25, 2002.

Please replace paragraph [0079] with the following replacement paragraph:

[0079] In order to illustrate that application of asymmetric waveforms as shown in Figure 6c will in fact create a FAIMS type of separation, the less complicated case of parallel plate electrode geometry will be considered. As is obvious to one of skill in the art, there are many ways to achieve the introduction of the fields between parallel plates, including the method of holding one plate at a fixed dc voltage while applying the asymmetric waveform to the other plate. This means that the mid-point between the two plates does not stay at the same apparent dc potential. If a constant dc level at the middle point between the plates is required, one plate is positive and the other plate negative relative to this middle dc voltage. Two asymmetric waveforms are applied to the opposite parallel plates using the traces shown in Figure 6c. Taking the square waveform example, the electric field in a first direction is established by a positive voltage 52 on one plate and a negative voltage 54 on the second plate. Simultaneously both plates change voltage to the opposite polarity, both signal amplitudes being of same absolute value, for example 56 and 58 in Figure 6c. In other words both plates carry an asymmetric waveform of opposite polarity. Together, the appropriate fields are established between the plates so that the ion between the two places experiences a high field for a short time and a lower field for a longer time. A compensating dc field must also be applied through, for example, the dc offset voltage via a difference of values of V1 and V2 in Figure 6c, to selectively transmit the ion of interest. It follows that the quadrupole rods in a vacuum can be operable in rf-only mode by application of an asymmetric waveform. At vacuum, the quadrupole rod assembly can be operated in rf-mode by the application of either a symmetric or an asymmetric waveform. At higher pressures, the quadrupole assembly can be operated in FAIMS mode by the application of

an asymmetric waveform and a compensation voltage. At intermediate pressures where both modes of operation are supported, the quadrupole assembly of Figure 6a is operated either in rf-only mode by the application of a symmetric waveform or in FAIMS mode by application of an asymmetric waveform and a compensation voltage by electrical controller 50.

Please replace paragraph [0080] with the following replacement paragraph:

[0080] The transition between purely rf-only mode and FAIMS separation mode at intermediate pressures is created, for example, by phase shifts in the two sinusoidal waves that comprise the asymmetric waveform described by equation 1. For example, Figures 7a, 7b, 7c, and 7d illustrate the resultant output waveform of the electrical controller ~~waveforms~~ with phase shifts of $\pi/2$, 1.0, 0.5, and 0.0 radians, respectively, in the two input sinusoidal waves used to produce the output waveform. ~~where the~~ The best approximation of an asymmetric square wave is achieved with a phase shift of $\pi/2$ and no asymmetry results with a phase shift of zero radians. In a FAIMS system including parallel flat plates at atmospheric pressure, an ion separation takes place during application of compensation voltage and a waveform generated with phase shift of $\pi/2$, while at the other extreme, no ion separation can be achieved if the waveform is generated with a phase shift of zero radians. On the other hand, when applied to quadrupole rods at low pressure, the symmetric output waveform having a phase shift of zero radians will result in conventional rf-only mode of operation, with mass range and low mass cutoff as appropriate to voltages and frequencies of the sine waves.